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17 January 1955

MEMORANDUM FOR: THE RECORD

SUBJECT: Project Monitor at the [redacted] P-101, Communication System, Infrared

1. Time and Place of Meeting: The meeting was held 11 and 12 January 1955 at the [redacted]

2. Attendance: [redacted]

3. Purpose of Meeting: The purpose of the meeting was to review past progress, discuss present problems, and to reorganize the work schedule for the project.

4. Discussion:

a. Field Test

A night field test was held [redacted], using two breadboard units with the old amplifiers having only 4 db rise in gain per octave. Weather conditions were excellent. The atmosphere was clear and the sky was overcast. Successful communications were established at a range of 4 3/4 miles, with and without IR filters. Voice quality was good although some trouble was experienced at first with garbled signals resulting from improper alignment of the equipment. It appears that portions of the transmitter beam near its edge cause this garbling. It was also noticed that the transmitter and receiver optical system in the units were not co-axial.

The breadboard units used produced a very strong signal, indicating that 4 3/4 miles is far from the maximum limit of ACW range.

The IR viewers proved very satisfactory. Sensitivity was ample and the image distortion, although noticeable, was not excessive.

b. Progress on Construction

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b. Progress on Construction and Design of the First Unit

(1) Carrying Case and Mechanical System: A case has been fabricated. All internal partitions have been installed. The bellows with the mirror objective is complete. The stand for the unit, consisting of the carrying case cover and three light triangular legs is complete and is satisfactorily stable and rigid.

The sweep-find mechanism, previously designed and modified, was found to be much too weak. With the case mounted in the sweep-find mechanism yoke, it was found that the case was able to oscillate in a vertical plane with respect to the stand. Oscillations 5 degrees in amplitude were easy to obtain by jarring the case. Additional bracing and stiffening is being added. It was also discovered that the step vertical adjustment was not sufficiently fine for aligning the receiver. A vernier adjustment will be added.

$$\text{Receive beam} = \frac{.040\text{" detector length}}{6\text{" focal length}} \text{ radian}$$

$$\times \frac{.040\text{"}}{6\text{"}} \text{ radian}$$

$$\text{Transmit beam} = \frac{.030\text{" mirror width}}{6\text{" focal length}} \text{ radians wide}$$

$$\times \frac{.188\text{"}}{6\text{"}} \text{ radians high}$$

Present Scan - Continuous azimuth adjustment
Vertical adjustment - steps of $\frac{0.125\text{" step}}{6\text{" lever arm}}$ radian

Vernier to be added.

It was requested that the glass windows in the case for the viewer objective and the mirror objective be covered with a metal cover.

(2) I. R. Viewer: The Viewer design is nearly finalized and construction of the prototype is underway.

(3) Receive-Transmit Amplifier: The circuit design has been debugged and construction of the prototype is completed save for wiring. It was recommended that a change be made to allow the PbS cell bias to be removed while transmitting.

(4) Battery Charger:

(4) Battery Charger: The circuit design has been finalized and the packaging design is started. Several cycles have been run on the Silvercells (1 complete cycle, 2 partial cycles) without trouble.

c. Drawings and Production Models (Phase III and Phase IV)

[redacted] was informed that standard size drawings are required on the equipment. The specification number-drawing number scheme was also mentioned. [redacted] will be furnished blank drawings and the numbering scheme. 25X1 25X1

It was decided that according to the present phasing of the contract informal engineering drawings will be provided at the close of Phase II. Formal drawings will be provided during Phase III with such pre-production units as are requested.

If possible, plans for initiating Phases III and IV should be made as soon as possible following evaluation of the first four units. Contract action initiating Phases III and IV should take place in time to prevent any lapse in the work.

It is suggested that a small number of production units be ordered as a Strategic Reserve, provided the evaluation is satisfactory.

d. Rescheduling of Project

[redacted] presently feels that any further rush to meet the 15 February delivery date for the first four units will result in poor quality equipment. Further, [redacted] feels that Phase II cannot be completed before 30 June 55. 25X1 25X1

The undersigned has reluctantly agreed that the situation is as described above. Consequently, the following schedule has been set up:

Project Monitor	15, 16, 17 February
Completion of First Four Units	7 March
Project Monitor	8, 9, 10 March
APD Tests on Equipment	14 - 18 March
Equipment Returned to [redacted]	21 March
Completion of Phase II	30 June

25X1

[redacted] will request an extension of time on Task I, RD-54 to 30 June 1955. Additional money to cover June will be requested since present funds will expire 30 May. Every attempt will be made to purchase all parts before 30 May. 25X1

5. Actions:

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5. **Actions:**

a. [redacted] will complete four units by 7 March. 25X1

b. [redacted] will apply for time extension by 1 February.

c. APD will furnish drawing standards to [redacted] 25X1

d. APD will consider plans for Phases III and IV.

[redacted] 25X1

TSS/APD

Distribution:
Orig. - P-101B
1 - Chrono

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